REMARKS

Upon entry of the present Amendment, claims 55-84 are all the claims pending in the application. Claims 1-54 are cancelled without prejudice or disclaimer. Claims 55-84 are added. No new matter is presented.

In the last Office Action, claims 1-3, 6-9, 12, 14, 17, 18, 21, 25, 34 were rejected under 35 U.S.C. § 103(a) as allegedly being unpatentable over Parks *et al.* (US 5,739,975) in view of Liikanen *et al.* (US 6,678,102 B1); claims 4 and 5 were rejected under 35 U.S.C. § 103(a) as allegedly being unpatentable over Parks *et al.* in view of Liikanen *et al.* and further in view of Wang *et al.* (US 2001/0055702 A1); claims 10, 11 and 36 were rejected under 37 C.F.R. § 103(a) as allegedly being unpatentable over Parks *et al.* in view of Liikanen *et al.* and further in view of Nozierese *et al.* (EP 11 31 031 A1); claim 20 was rejected under 37 C.F.R. § 103(a) as allegedly being unpatentable over Parks *et al.* in view of Liikanen *et al.*, further in view of Nozieres et al. and further in view of "Glass Substrate for Magnetic in HDD", Information Sheet [retrieved 7/24/2002] http://www7.big.or.jp/~cgi19786/ngf/nglass/ng06e.html[1]; claims 22-24 and 27 were rejected under 35 U.S.C. § 103(a) as allegedly being unpatentable over Parks *et al.* in view of Liikanene *et al.* and further in view of Dunfield *et al.* (US 3,335,850 B1); and claim 31 was rejected under 35 U.S.C. § 103(a) as allegedly being unpatentable over Parks *et al.* and

[1] Although submitted by Applicant in the Information Disclosure Statement of May 20, 2004, Applicant has made no admission that this document is prior art with respect to the present application. Moreover, the Information Disclosure Statement expressly stated that the submission of the documents is not intended as an admission that any such document constitutes prior art, nor was the right to remove any submitted document waived. The Examiner's characterization of this document as "Applicant's Admitted Prior Art" is therefore improper.

further in view of Germuska (GB 21 78 569 A1). Further, claim 13 was objected to as being dependent upon a rejected base claim, but would be considered allowable if rewritten in independent form to include all of the limitations of the base claim and any intervening claims.

As noted above, claims 1-54 are cancelled without prejudice or disclaimer.[2] Thus, the outstanding prior art rejections are moot.

New Claims

Applicant is adding new claims 55-84, which are related to the previously elected Species II, as elected in the Response to Election of Species filed March 7, 2005.

Claim 55 defines an information storage apparatus comprising, *inter alia*, a storage medium; and a head assembly having a substantially planar surface and a plurality of read/write heads. Claim 55 further recites the read/write heads are arranged substantially in the plane of the planar surface, the information storage medium and the head assembly are arranged in mutually sliding abutment such that the read/write heads are substantially in sliding contact with the outer surface of the information storage medium in use. In addition, claim 55 recites the feature of the storage medium and the head assembly comprise a substrate having a sufficiently low thermal expansion that in use thermal misregistration between the storage medium and the head assembly does not take place.

[2] Claims 15-16, 26, 28-30, 32-33, 35 and 37-54 were cancelled by the Amendment of December 12, 2005.

Applicant submits that neither Liikanen nor Parks, which the Examiner relied upon in rejecting claim 1, teaches or suggests at least the feature of the storage medium and the head assembly comprise a substrate having a sufficiently low thermal expansion that in use thermal misregistration between the storage medium and the head assembly does not take place, as recited by new claim 55.

For instance, Parks describes the structure of the head assembly in column 17, line 1 - column 21, line 43; and describes the magnetic medium in column 23, line 49 - column 26, line 49. With regard to the description of the head assembly, Parks describes the heads are fabricated into the bottom surface of a substrate which can be ceramic, glass, silicon wafer etc. *See* Parks at column 18, lines 5-9. Parks then describes the fabrication and the structure of the heads. However, Parks fails to teach the substrates of either of the head assembly or the storage medium being of low expansion material and thus fails to teach both being of sufficiently low thermal expansion material that thermal misregistration between the storage medium and the head assembly does not take place.

With regard to the description of the magnetic medium, Parks describes that the medium is attached to a fixed stationary housing by an adhesive where the adhesive must be flexible enough to allow the housing and medium to expand or contract, taking into account any differences between the thermal coefficients of expansion of the housing material and the medium material. *See* Parks at column 23, lines 50-59. This teaching clearly points to significant thermal expansion being expected.

Parks teaches aligning the major axis of the magnetic medium with the Y-axis of the substrate so that the minor axis of the magnetic medium is aligned with the X-axis. This is a different approach to the Applicant's invention, as defined by claim 55. Thus, the approach of Parks amounts merely to orienting the most significant distortion to take place in the least unfavorable direction. However, Parks does not address actually reducing the distortion nor does it teach that misregistration due to thermal expansion can be avoided so as to enable data to be written or read without seeking. Thus, Parks fails to teach or suggest the storage medium and the head assembly comprising a substrate having a sufficiently low thermal expansion that in use thermal misregistration between the storage medium and the head assembly does not take place, as claimed.

As to Liikanen, Liikanen was only raised in the previous Official Action because the Examiner alleged Liikanen to describe refresh means which the Applicant had previously included in claim 1 because the Examiner initially suggested that such a claim would be allowable. Claim 55 does not recite refresh means. The teaching of Liikanen is irrelevant to the subject matter claimed in claim 55 since it relates to a conventional rotational disk drive where a single read/write head is on an actuator arm and "flies" above the rotating disk. Thus, the device of Liikanen is completely different in construction to the present invention as claimed where the head assembly and the storage medium are in mutually sliding abutment.

The aim of Liikanen (see, for example, column 1, lines 5-9, and column 2, lines 45-65) is to detect if the read/write head is "flying" to high above the recording medium, i.e. a high fly write event, by comparing the amplitude of a signal derived from the passage of a servo sector

position burst or group of bursts with an average value. If the observed amplitude is less than the average amplitude, a write fault error may be triggered. *See* Liikanen at column 2, line 66 to column 3, line 21.

There is simply no disclosure of both the head assembly and the storage medium having substrates of sufficiently low thermal expansion so as to prevent misregistration due to thermal expansion. Furthermore, as the device of Liikanen is a conventional disk drive then the problems of preventing misalignment due to thermal expansion between a plurality of heads on a head assembly that are in sliding abutment with the storage medium would not occur and are therefore not addressed in Liikanen.

Accordingly the present invention as now claimed is both novel and inventive over Liikanen, whether considered alone or in combination with Parks, assuming arguendo that the Examiner asserted motivation to combine is proper. Applicant further submits that none of the other documents relied upon by the Examiner in the previous Office Action teach or suggest all the features of claim 55. Allowance of claim 55 is therefore requested.

With respect to the newly added dependent claims, Applicant submits that claims 56-84 are allowable at least by virtue of their dependency and by virtue of the features recited therein.

Conclusion

In view of the above, reconsideration and allowance of this application are now believed to be in order, and such actions are hereby solicited. If any points remain in issue which the Examiner feels may be best resolved through a personal or telephone interview, the Examiner is kindly requested to contact the undersigned at the telephone number listed below.

The USPTO is directed and authorized to charge all required fees, except for the Issue Fee and the Publication Fee, to Deposit Account No. 19-4880. Please also credit any overpayments to said Deposit Account.

Respectfully submitted,

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